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Date 1 July 2005

Our ref 480-WO-PCT/VIMN
Your ref PCT/DK2005/000222

Dear Sirs

International Application No. PCT/DK2005/000222
Priority Document: US 60/559,096

Please find enclosed the following priority document:

US 60/559,096, filing date: 2 April 2004

Yours sincerely

Vibeke M. Nielsen

Vibeke Møller Nielsen
Corporate Patents & Trademarks

PA 1299422

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

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March 25, 2005

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APPLICATION NUMBER: ***60/559,096***
FILING DATE: ***April 02, 2004***

By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS

H. L. JACKSON
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PTO/SB/16 (08-03)
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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No.

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Bjarke	Ebert	Farum, Denmark
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Additional inventors are being named on the _____ separately numbered sheets attached hereto

TITLE OF THE INVENTION (500 characters max)

TREATMENT OF IMPAIRED RESPIRATORY FUNCTION

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ENCLOSED APPLICATION PARTS *(check all that apply)*

[x] Specification *Number of Pages* 12
[ ] Drawing(s) *Number of Sheets*
[x] Application Data Sheet. See 37 CFR 1.76
[ ] CD(s), Number
[ ] Other (specify):

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT

[ ] Applicant claims small entity status. See 37 CFR 1.27.
[x] A check or money order is enclosed to cover the filing fees.
[x] The Director is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: 04-0100
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FILING FEE AMOUNT ($): 160.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

[x] No [ ] Yes, the name of the U.S. Government agency and the Government contract number are: _____

Respectfully submitted,

SIGNATURE _____

TYPED OR PRINTED NAME Jay P. Lessler

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Date April 2, 2004

REGISTRATION NO. *(if appropriate)* 41,151

Docket Number: 05432/0201132-US0

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT	($) 160.00

Complete If Known	
Application Number	Not Yet Assigned
Filing Date	Concurrently Herewith
First Named Inventor	Jonas Lundahl
Examiner Name	Not Yet Assigned
Art Unit	N/A
Attorney Docket No.	05432/0201132-US0

METHOD OF PAYMENT *(check all that apply)*

☒ Check ☐ Credit Card ☐ Money Order ☐ Other ☐ None

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Deposit Account Number: 04-0100

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	160.00

SUBTOTAL (1) ($) 160.00

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

			Extra Claims		Fee from below	=	Fee Paid
Total Claims		-** =		x		=	
Independent Claims		-** =		x		=	
Multiple Dependent						=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0.00

***or number previously paid, if greater; For Reissues, see above*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge – late filing fee or oath	
1052	50	2052	25	Surcharge – late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive – unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 0.00

SUBMITTED BY				(Complete *(if applicable)*)	
Name (Print/Type)	Jay P. Lessler	*Registration No. (Attorney/Agent)*	41,151	*Telephone*	(212) 527-7770
Signature				*Date*	April 2, 2004

Express Mail Label No. Dated: _____

Application No. (if known): Attorney Docket No.: 05432/0201132-US0

Certificate of Express Mailing Under 37 CFR 1.10

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Signature

D. DAVIS
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Provisional Patent Application Transmittal (1 page)
Fee Transmittal (1 page)
Application Data Sheet (3 pages)
Specification and Claims (12 pages)
Check No. 4591 in the amount of $160.00

TREATMENT OF IMPAIRED RESPIRATORY FUNCTION

Field of invention

The present invention relates to the use of gaboxadol for preparing a medicament for treating impaired respiratory function in a human patient suffering from sleep apnea, such as central sleep apnea or obstructive sleep apnea, a method for treating impaired respiratory function in a human patient suffering from sleep apnea.

Background of the Invention

An open upper airway is a basic requirement for breathing during both wakefulness and sleep. Intensive research during the last two decades has led to the identification of a complex of conditions characterized by inadequately low airway patency – and thus breathing – which occur exclusively during sleep. In patients suffering from one or more out of several forms of these condition, breathing becomes partially or totally interrupted during sleep due to a collapse or obstruction of the upper airway.

The presently applied principal forms of treatment in sleep apnea include surgery of the upper airway, intraoral mandibular advancement devices and long-term treatment with nasal continuous positive airway pressure (nCPAP). These methods of treatment are cumbersome, poorly tolerated and/or expensive. Various forms of pharmacological treatment, e.g. by administration of tricyclic antidepressants, selective serotonin reuptake inhibitors and progesterone have been employed but have not gained wide clinical use due to limited efficacy. The respiratory stimulant theophylline and azetazolamide, an carbonic anhydrase inhibitor, have experimentally been employed in various forms of central sleep apnea (CSA) but are not applied in the clinical routine.

Gaboxadol (4,5,6,7-tetrahydroisoxazolo(5,4-*c*)pyridin-3-ol) described in EP patent 0000338 B1, and in EP Patent 0840601 B1 has shown great potential in the treatment of sleep disorders in general.

Description of the Invention

There is a need for a new effective treatment of impaired respiratory function in a human patient suffering from sleep apnea. In particular, pharmacological treatment of such disorders would offer a definite advantage over the invasive or non-invasive methods used at present, many of which only provide insufficient relief and some of which are cumbersome to the patient.

Apnea specialists generally agree that there are three different types of sleep apnea: obstructive, central, and mixed. Of these three, obstructive sleep apnea (OSA) is the most common; central sleep apnoea (CSA) is rare; mixed sleep apnea is a combination of the previous two with treatment being the same as OSA.

Obstructive sleep apnea is characterized by repetitive pauses in respiration during sleep due to the obstruction and/or collapse of the upper airway (throat), usually accompanied by a reduction in blood oxygen saturation, and followed by an awakening to breathe. This is called an apnea event. Respiratory effort continues during the episodes of apnoea. An analogy might be helpful: OSA is like putting your hand over your vacuum cleaner intake nozzle. Your hand blocks all air from getting through (upper airway collapse) even though the vacuum cleaner is still applying suction (respiratory effort continues). The vacuum cleaner is usually straining somewhat at this time, and so does the human body.

Central Sleep Apnea is defined as a neurological condition causing cessation of all respiratory effort during sleep, usually with decreases in blood oxygen saturation. To return to the vacuum cleaner analogy: central sleep apnoea would be like pulling the plug on the vacuum cleaner. No power, no suction: if the brainstem center controlling breathing shuts down there's no respiratory effort and no breathing. The person is aroused from sleep by an automatic breathing reflex, so may end up getting very little sleep at all.

It should be observed that obstruction, in the context of the present invention, excludes obstruction by foreign objects or by material excreted by the body, such as mucus. In its simplest form partial airway collapse or obstruction is indicated by profound and vigorous snoring. More prominent airway collapse or obstruction results in so called hypopnea, a

condition in which airflow is significantly reduced during inspiration with or without concomitant signs of hypoxemia. The most severe form, obstructive apnea, describes a state of total collapse of the upper airway. The condition, in its more pronounced forms, is associated with repeated episodes of interrupted airflow during which the patient maintains inspiratory attempts against an occluded airway. The reduction of airflow eventually leads to hypoxemia, hemodynamic changes and arousal from sleep. Moreover, cardiovascular complications are common in obstructive sleep apnoea. Obstructive sleep apnoea has been associated with increased insulin resistance, diabetes, obesity, alterations of lipid metabolism and increased platelet aggregability. It is important to point out that the symptoms and complications listed above are not confined to severe cases. They may also be observed in cases of partial sleep apnoea characterized by frequent hypopneas or even intense snoring.

A number of factors that predispose for airway collapse during sleep have been identified. Among others these include obesity, hypertrophied upper airway tissue (particularly in children), and short jaw. However, a substantial number of subjects with mild, moderate or severe sleep apnoea do not exhibit any of these factors and may therefore be referred to as cases with essential sleep apnoea. It appears likely that essential sleep apnoea may be caused by central nervous mechanisms relating to reduced nervous activity to upper airway muscles responsible for maintenance of upper airway aperture during sleep. Such mechanisms may also be important for precipitating or aggravating sleep disordered breathing in cases with predisposing factors such as described above.

The absence of obvious aberrant anatomic factors, however, does not exclude a dynamic malfunction of the tongue and the upper airway dilating musculature. Such defect function may originate in the central nervous system, at the level of signal transmission to peripheral muscles or at the neuromuscular junction. Such defective control seems to be particularly pronounced during sleep only, suggesting the central nervous, peripheral neural and/or neuromuscular control of the upper airway is particularly prone to be affected in this state. Moreover, and importantly, upper airway tone will ultimately counteract the airway collapsing forces generated by inspiratory flow of air in the airway. A situation characterized by pronounced chemoreflex activation and thereby high ventilatory drive in order to

optimize the opportunities for a high inspiratory flow. If this potentially collapsing force is counteracted by inappropriately low airway tone the airway will tend to collapse. This potential mechanism is especially attractive in a specific form of sleep disordered breathing referred to as central apnea, periodic breathing and/or Cheyne-Stokes respiration (all here referred to as central sleep apnea). This form of breathing disorder is characterized by an oscillating pattern of respiration which periodically is driven by considerable chemoreflex activation.

Ventilatory control stability depends on several factors involved in the loop of events responsible for maintenance of metabolic homeostasis. This loop includes a central controller gain (including chemoreceptor responsiveness, brain stem respiratory center responsiveness and excitability) and a series of plant factors that determine the extent to which gas tensions in mixed pulmonary capillary blood will change for a given change in ventilation. Finally there are factors which will determine the change in gas tension at the chemoreceptor for a given change in pulmonary capillary gas tension. These factors include pulmonary circulatory delays and diffusion delays which are involved in the process of the chemoreflex feedback. The "loop gain" or extent of feedback control which includes all these factors provides a substrate for estimation of the susceptibility to periodic breathing. When loop gain is changed to a value of unity instability can occur and this change may take place at any of the steps included in the loop. In this sense it may be advocated that different forms of sleep apnea including central and obstructive forms may have a similar principal pathogenetic background. In some cases gain may be altered substantially without development of sleep disordered breathing suggesting a highly stable respiratory control system. In others central apneas may be elicited after minor alteration of gain suggesting a control system prone to oscillation. Such increased proneness may be more prevalent in for instance cardiac failure and in patients with compromised upper airway aperture highly dependent on upper airway dilatory muscle activity for maintenance of ventilation. Moreover, sleep per se, particularly REM sleep, appears to be a particularly prominent modifier of loop gain in certain patients with sleep disordered respiration. From this reasoning it follows that a remedy that modifies one or several of the elements encompassed in the loop system may effectively alter the characteristics of the loop and reduce or eliminate sleep disordered respiration.

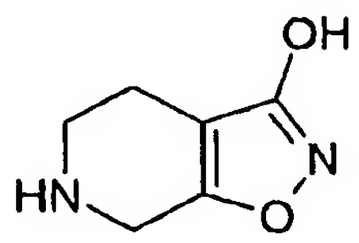
An objective of the invention is to provide an effective treatment of impaired respiratory function in a human patient suffering from sleep apnea, in particular central sleep apnea or obstructive sleep apnea or a mix thereof, which reduces and/or eliminates some or all of the drawbacks of the methods known to the art.

A further objective of the invention is to provide an effective treatment, in particular long-term treatment, of a human patient suffering from sleep apnea.

A further objective of the invention is to provide an effective treatment, in particular long-term treatment, of a human patient, without causing abuse or dependency of treatment.

Further objectives of the invention will become apparent upon reading the present specification.

Gaboxadol has the general formula



;

and throughout the description "gaboxadol" is intended to include any form of the compound, such as the base (zwitter ion), pharmaceutically acceptable salts, e.g. pharmaceutically acceptable acid addition salts, hydrates or solvates of the base or salt, as well as anhydrates, and also amorphous, or crystalline forms.

Treatment of impaired respiratory function is intended to mean improving or alleviating, the respiratory function in patients suffering from sleep apnea, over a period of sleep, such as 10 minutes to 10 hours.

The treatment is typically given during less than a week (short term treatment), from 1 to 4 weeks (intermediate term treatment) or for a period exceeding 4 weeks (long-term treatment). A special type of long-term treatment is chronic treatment.

The term "elderly" is intended to mean humans from 65 years and above.

The term "adults" is intended to mean humans from 18 to 64 years.

According to the present invention an effective medicament with no significant side-effects for the treatment of impaired respiratory function in a human patient suffering from sleep apnea, such as central sleep apnea or obstructive sleep apnea is provided.

In a broad aspect, the present invention relates to use of gaboxadol for preparing a medicament for treating sleep apnea in a human patient.

In another aspect, the present invention relates to use of gaboxadol for preparing a medicament for treating impaired respiratory function in a human patient suffering from sleep apnea, such as central sleep apnea or obstructive sleep apnea.

In one embodiment, sleep apnea is a mixture of central sleep apnea and obstructive sleep apnea.

In another embodiment, gaboxadol increases slow wave sleep in the patient and thereby improves the respiratory function.

In a further embodiment, gaboxadol is in the form of an acid addition salt, or a zwitter ion hydrate or zwitter ion anhydrate. In a further embodiment, gaboxadol is in the form of the pharmaceutically acceptable acid addition salt selected from the hydrochloride or hydrobromide salt, or in the form of the zwitter ion monohydrate.

In a further embodiment, the medicament is an oral dose form. Typically, the medicament is a solid oral dose form, such as tablets or capsules, or a liquid oral dose form. Thus, a typical embodiment is use of gaboxadol for preparing a medicament in an oral dose form comprising an effective amount of the gaboxadol from 2.5 mg to 20 mg, for treating impaired respiratory function in a human patient, such as an elderly human patient. The

effective amount ranges from 2.5 mg to 20 mg of gaboxadol calculated as the base. Preferably, the gaboxadol is in a crystalline form. Further embodiments of the medicament comprises an effective amount of gaboxadol from 2.5 mg to 20 mg, such as 5 mg to 15 mg, e.g. 2.5 mg, 5 mg, 7.5 mg, 10 mg, 12.5 mg, or 15 mg. A typical embodiment being 5 mg to 15 mg of crystalline gaboxadol, such as the hydrochloride of gaboxadol.

The human patient to be treated with gaboxadol may in fact be any subject of the human population, male or female, which may be divided into children, adults, or elderly. Any one of these patient groups relates to an embodiment. Typically, the human patient is selected from adults or elderly patients.

In a further embodiment, the treatment is short term treatment. In a further embodiment the treatment is intermediate term treatment. In a further embodiment the treatment is long term treatment. In a further embodiment the treatment is chronic treatment.

A typical embodiment is use of gaboxadol for preparing a medicament, such as in an oral dose form, comprising an effective amount of the gaboxadol from 2.5 mg to 20 mg, for long term treatment of impaired respiratory function in a human patient, such as an elderly human patient, suffering from sleep apnea, such as central sleep apnea or obstructive sleep apnea.

In a further aspect, the present invention relates to a method for treating sleep apnea in a human patient, comprising administering to said patient an effective amount of gaboxadol per day. In a still further aspect the present invention relates to a method for treating impaired respiratory function in a human patient suffering from sleep apnea, such as central sleep apnea or obstructive sleep apnea, comprising administering to said patient an effective amount of gaboxadol per day. Typically, the effective amount in an oral dose form, comprises gaboxadol from 2.5 mg to 20 mg per day.

The timing of the administration of gaboxadol according to the invention will depend on the formulation and/or route of administration used. Typically, administration of gaboxadol will, in the majority of cases, be given as a long-term treatment regimen whereby pharmacokinetic steady state conditions will be reached. Medication for peroral or

parenteral administration may also be given in immediate relation to a particular sleeping period, for instance 10 minutes to 3 hours prior to the onset of sleep. Thus, when using gaboxadol for preparing a medicament, or when administering gaboxadol, a typical embodiment is an oral medicament, or peroral administration, wherein gaboxadol is given in immediate relation to a particular sleeping period from 5 minutes to 5 hours prior to onset of sleep, such as 10 minutes to 3 hours prior to the onset of sleep.

In a further aspect, the present invention relates to use of gaboxadol for preparing a medicamcnt comprising an amount of from 2.5 mg to 20 mg of gaboxadol for treating sleep apnea in a human patient, said amount being effective during a substantial portion of a single sleep period.

In a still further aspect, the present invention relates to use of gaboxadol for preparing a medicament comprising an amount of from 2.5 mg to 20 mg of gaboxadol for treating impaired respiratory function in a human patient suffering from sleep apnea, such as central sleep apnea or obstructive sleep apnea, said amount being effective during a substantial portion of a single sleep period.

In a further aspect, the present invention relates to a method for treating impaired respiratory function in a human patient suffering from sleep apnea, such as central sleep apnea or obstructive sleep apnea, comprising administering to said patient an effective amount of 2.5 mg to 20 mg gaboxadol per day, said amount being effective during a substantial portion of a single sleep period.

In a further embodiment, the substantial portion is 40% or more, 50% or more, 60% or more, 70% or more, such as 80% or more.

In a further embodiment, the single sleep period is from one to eight hours. Typically, the single sleep period is from one to four hours, or from one to six hours, such as 1, 2, 3, 4, 5, 6, 7, or 8 hours.

In a further embodiment, the amount of gaboxadol is released from a composition for controlled release, such as an extended release composition.

In a further embodiment, from 50% to 100% of the amount of gaboxadol is released within a period of three hours from administration.

In a further embodiment, from 80% to 100% of the amount of gaboxadol is released within a period of five hours from administration.

According to the invention gaboxadol may be used as the base (i.e. the zwitter ion) or as a pharmaceutically acceptable acid addition salt thereof or as an anhydrate or hydrate or solvate of such salt or base. The salts of the compound used in the invention are salts formed with non-toxic organic or inorganic acids. Exemplary of such organic salts are those with maleic, fumaric, benzoic, ascorbic, succinic, oxalic, bis-methylenesalicylic, methanesulfonic, ethane-disulfonic, acetic, propionic, tartaric, salicylic, citric, gluconic, lactic, malic, mandelic, cinnamic, citraconic, aspartic, stearic, palmitic, itaconic, glycolic, p-amino-benzoic, glutamic, benzene sulfonic and theophylline acetic acids, as well as the 8-halotheophyllines, for example 8-bromo-theophylline. Exemplary of such inorganic salts are those with hydrochloric, hydrobromic, sulfuric, sulfamic, phosphoric and nitric acids. Gaboxadol may also be used as the zwitter ion, e.g. the monohydrate thereof.

The acid addition salts according to the invention may be obtained by treatment of gaboxadol with the acid in an inert solvent followed by precipitation, isolation and optionally re-crystallisation by known methods and if desired micronisation of the crystalline product by wet or dry milling or another convenient process, or preparation of particles from a solvent-emulsification process. Suitable methods are described in EP patent 0000338.

Precipitation of the salt is typically carried out in an inert solvent, e.g. an inert polar solvent such as an alcohol (e.g. ethanol, 2-propanol and n-propanol), but water or mixtures of water and inert solvent may also be used.

According to the invention, gaboxadol should be administered orally, and it may be presented in any suitable form for such administration, e.g. in the form of tablets, capsules, powders, syrups or solutions. Typically, and in accordance with the purpose of the present invention, gaboxadol is administered in the form of a solid pharmaceutical entity, suitably as a tablet or a capsule.

Methods for the preparation of solid pharmaceutical preparations are well known in the art. Tablets may thus be prepared by mixing the active ingredients with ordinary adjuvants and/or diluents and subsequently compressing the mixture in a convenient tabletting machine. Examples of adjuvants or diluents comprise: corn starch, lactose, talcum, magnesium stearate, gelatine, lactose, gums, and the like. Any other adjuvant or additive such as colourings, aroma, preservatives, etc. may also be used provided that they are compatible with the active ingredients.

A suitable formulation of gaboxadol is described in WO 02/094225 filed May 17, 2002. Without limiting the invention in any way, it is intended that any one of the aspects or embodiments of this patent application is suitable embodiments of the medicament or pharmaceutical compositions herein.

Experimental Procedure

Human patients suffering from sleep apnea are dosed prior to bedtime with gaboxadol p.o. at doses from 2.5 mg to 20 mg.

We Claim:

1. Use of gaboxadol for preparing a medicament for treating sleep apnea in a human patient.

2. Use of gaboxadol for preparing a medicament for treating impaired respiratory function in a human patient suffering from sleep apnea, such as central sleep apnea or obstructive sleep apnea.

3. Use of claim 1 or 2 wherein sleep apnea is central sleep apnea.

4. Use of claim 1 or 2 wherein sleep apnea is obstructive sleep apnea.

5. Use of claim 1 or 2 wherein sleep apnea is a mix of central sleep apnea and obstructive sleep apnea.

6. Use of any one of claims 1-5 wherein gaboxadol increases slow wave sleep in the patient and thereby improves the respiratory function.

7. Use of any one of claims 1-6 wherein gaboxadol is in the form of an acid addition salt, such as the hydrochloride or hydrobromide salt, or a zwitter ion hydrate, such as the zwitter ion monohydrate, or the zwitter ion anhydrate.

8. Use of any one of claims 1-7 wherein the medicament is an oral dose form.

9. Use of claim 8 wherein the medicament is a solid oral dose form, such as tablets or capsules, or a liquid oral dose form.

10. Use of any one of claims 8-9 wherein the medicament comprises from 2.5 mg to 20 mg, such as 5 mg to 15 mg of gaboxadol.

11. Use of claim 10 wherein the medicament comprises 2.5 mg, 5 mg, 7.5 mg, 10 mg, 12.5 mg, or 15 mg of gaboxadol.

12. Use of any one of claims 1-11 wherein the human patient is selected from elderly or adults.

13. Use of any one of claims 1-12 wherein said treatment is short term treatment.

14. Use of any one of claims 1-12 wherein said treatment is intermediate term treatment.

15. Use of any one of claims 1-12 wherein said treatment is long term treatment.

16. Use of any one of claims 1-15 wherein said gaboxadol is crystalline.

17. Use of any one of claims 1-16 wherein the medicament comprises an amount of from 2.5 mg to 20 mg, such as 5 mg to 15 mg of gaboxadol, said amount being effective during a substantial portion of a single sleep period.

18. Use of claim 17 wherein said substantial portion is 50% or more, such as 80% or more.

19. Use of any one of claims 17-18 wherein said single sleep period is from one to eight hours.

20. Use of any one of claims 17-19 wherein the amount of gaboxadol is released from a composition for controlled release, such as an extended release.

21. Use of claim 20 wherein from 50% to 100% of the amount of gaboxadol is released within a period of three hours from administration.

22. Use of claim 20 wherein from 80% to 100% of the amount of gaboxadol is released within a period of five hours from administration.

23. A method for treating impaired respiratory function in a human patient suffering from sleep apnea, such as central sleep apnea or obstructive sleep apnea, comprising administering to said patient an effective amount of gaboxadol per day.

24. A method for treating sleep apnea, such as central sleep apnea or obstructive sleep apnea, in a human patient, comprising administering to said patient an effective amount of gaboxadol per day.

Application Data Sheet

Application Information

Application Type::	Provisional
Subject Matter::	Utility
Suggested Group Art Unit::	N/A
CD-ROM or CD-R?::	None
Sequence submission?::	None
Computer Readable Form (CRF)?::	No
Title::	TREATMENT OF IMPAIRED RESPIRATORY FUNCTION
Attorney Docket Number::	05432/0201132-US0
Request for Early Publication?::	No
Request for Non-Publication?::	No
Small Entity?::	No
Petition included?::	No
Secrecy Order in Parent Appl.?::	No

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Initial 04/02/04

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From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING
SUBMISSION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

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Date of mailing *(day/month/year)* 08 July 2005 (08.07.2005)	
Applicant's or agent's file reference 480-WO-PCT	**IMPORTANT NOTIFICATION**
International application No. PCT/DK2005/000222	International filing date *(day/month/year)* 31 March 2005 (31.03.2005)
International publication date *(day/month/year)*	Priority date *(day/month/year)* 02 April 2004 (02.04.2004)
Applicant H. LUNDBECK A/S et al	

1. By means of this Form, which replaces any previously issued notification concerning submission or transmittal of priority documents, the applicant is hereby notified of the date of receipt by the International Bureau of the priority document(s) relating to all earlier application(s) whose priority is claimed. Unless otherwise indicated by the letters "NR", in the right-hand column or by an asterisk appearing next to a date of receipt, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).

2. *(If applicable)* The **letters "NR"** appearing in the right-hand column denote **a priority document which, on the date of mailing of this Form, had not yet been received by the International Bureau** under Rule 17.1(a) or (b). Where, under Rule 17.1(a), the priority document must be submitted by the applicant to the receiving Office or the International Bureau, but the applicant fails to submit the priority document within the applicable time limit under that Rule, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

3. *(If applicable)* **An asterisk (*)** appearing next to a date of receipt, in the right-hand column, denotes **a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b)** (the priority document was received after the time limit prescribed in Rule 17.1(a) or the request to prepare and transmit the priority document was submitted to the receiving Office after the applicable time limit under Rule 17.1(b)). Even though the priority document was not furnished in compliance with Rule 17.1(a) or (b), the International Bureau will nevertheless transmit a copy of the document to the designated Offices, for their consideration. In case such a copy is not accepted by the designated Office as the priority document, Rule 17.1(c) provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
02 April 2004 (02.04.2004)	60/559,096	US	06 July 2005 (06.07.2005)

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